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AEC 597/23

October 1, 1953

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ATOMIC ENERGY COMMISSION

CASTLE PROGRAM

Note by the Secretary

1. The attached report by the Director of Military Application is circulated for consideration by the Commission at an early date.

2. The CASTLE program will be discussed at the AEC-MLC conference scheduled for 2:00 p.m., Thursday, October 1, 1953.

ROY B. SNAPP

Secretary

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## ATOMIC ENERGY COMMISSION

### CASTLE PROGRAM

Report by the Director of Military Application

#### THE PROBLEM

1. To determine the scope and timing of Operation CASTLE.

#### SUMMARY

2. Operation CASTLE embraces both short-term and long-term goals for the thermonuclear program. The short-term goal is to prove in an emergency capability with one or more thermonuclear weapons currently being engineered for production and delivery. The long-term goal is to test new designs which should lead to thermonuclear weapons that are smaller, lighter, more deliverable, and perhaps of higher yield in the future. The tests of the ~~TOP SECRET~~ are directed toward determining the content of the emergency capability program. The test of the ~~TOP SECRET~~ may enable the weight of the emergency capability weapons to be reduced and, together with the tests of the ~~TOP SECRET~~ should point the way to the next generation of thermonuclear weapons. The earliest feasible date for the start of the CASTLE tests is March 1, 1954. The CASTLE program recommended is believed to be the maximum practicable program.

RESTRICTED DATA

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The Radiation Laboratory (Livermore) proposes to test at CASTLE the two radiation implosion devices, namely the [REDACTED] and the [REDACTED] which they have described elsewhere. The total CASTLE program thus remains at six shots. The schedule of these six shots was established, after a thorough review of the status of construction at Eniwetok-Bikini, the rate of availability of Li<sup>6</sup>, the design and fabrication status of the test shots, and the logistic problems of the Task Force, as follows:

March 1, 1954

March 11

March 22

March 29

April 7

April 14

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Pre-eminent among the factors which have led to the adoption of this schedule are the following:

1. The construction program at Eniwetok would require joint occupancy of test structures by the contractor and by scientific personnel for at least two weeks before shot date if an earlier schedule were to be attempted. Such joint occupancy (e.g. wiring going in by the contractor at the same time electronic equipment is being tested by scientific personnel) is believed to be completely impractical. From a security point of view, it is most undesirable to have construction workmen present during weapon assembly and placement operations. The proposed schedule eliminates (or minimizes) such joint occupancy.

2. The supply of Li<sup>6</sup> for the proposed experiments should be complete (according to present predictions) for the proposed schedule at least 50 days in advance of actual shot date. Approximately 40 days is regarded as minimal time for shipment, fabrication, local assembly and test, overseas shipment by air, and assembly and test overseas. The proposed schedule allows a slight degree of freedom in this respect.

3. The proposed schedule will permit the Task Force to send the major portion of its personnel overseas immediately after Christmas rather than sometime before. This is a matter of some concern to the Task Force Commander for obvious reasons of morale. It will also permit a considerable degree of logistic simplification, particularly with regard

[REDACTED]

[REDACTED]

to the shipment of certain construction materials for the contractor. Airlift requirements in the weeks after 1 January 1954 are extremely heavy and it is not obvious that MATS can satisfy these requirements. The proposed schedule will ease this problem.

4. Design, fabrication, assembly, and local test of both the proposed LASL and Livermore devices can probably meet the above schedule unless presently unforeseen delays are encountered. Similarly, the diagnostic experimentation will probably be ready by these dates. Earlier dates would be extremely problematical in terms of actual accomplishment.

5. To attempt to meet earlier dates and then postpone at the last minute is wasteful of time, money, and logistic effort. The present schedule represents the best proposal which can be made at this time for the earliest practicable schedule which can be met if no unforeseen difficulties are encountered.

We have attached to this letter as appendices (1) a table of the general character and requirements of the proposed LASL devices, as well as some additional general information on other weapon systems which may be of interest for comparison; and (2) a somewhat revised production schedule for the emergency capability period based upon the inclusion of the [REDACTED] only in the CASTLE test program. Although the active material requirements for these tests are fairly precise, it may be well to postpone the specific request to higher authority for permission to expend these materials until the exact amounts have been determined.

Very truly yours,

/s/

N.E. Bradbury  
Director

APPENDIX I

OY(93.5%)  
(Kg)

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Pu  
(Kg)

T  
(R)

B<sup>10</sup>  
(Kg)

Li(Kg) at --%

Warhead  
Weight  
(lbs.)

Warhead  
Diameter  
(Inches)

Warhead  
Length  
(Inches)

Anticipated  
Yield Range  
(MT)

Comment

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